

NOT TO BE TAKEN AWAY.

ANNUAL STATISTICAL RETURNS  
AND  
SHORT NOTES ON VACCINATION  
IN  
BIHAR AND ORISSA

FOR THE YEAR

**1920-21**

BY

MAJOR W. C. ROSS, M.B., CH.B., D.P.H., I.M.S.,

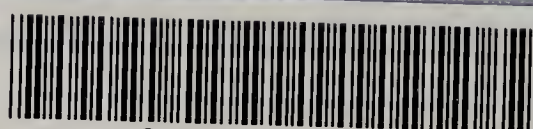
*Sanitary Commissioner, Bihar and Orissa.*

PATNA :

PRINTED BY THE SUPERINTENDENT, GOVERNMENT PRINTING, BIHAR AND ORISSA  
1921.

[Price—Indian, 12 annas.]

W. H. L. L. L.
LIBRARY
+
Am.
QW28
314
Q55
1920-21



22501899283



SEASER BUREAU  
RECEIVED  
13 DEC 1921

ANNUAL STATISTICAL RETURNS  
AND  
SHORT NOTES ON VACCINATION  
IN  
BIHAR AND ORISSA

FOR THE YEAR

**1920-21**

BY

MAJOR W. C. ROSS, M.B., CH.B., D.P.H., I.M.S.,

*Sanitary Commissioner, Bihar and Orissa.*



PATNA :

PRINTED BY THE SUPERINTENDENT, GOVERNMENT PRINTING, BIHAR AND ORISSA  
1921.

[Price—Indian, 12 annas.]

## Agents for the Sale of Books published by the Bihar and Orissa Government.

### Agents in India.

- |  |  |
|--|--|
| (1) Messrs. Thacker, Spink & Co., Calcutta.  | (8) Proprietor of the Newal Kishore Press, Lucknow.                              |
| (2) Messrs. W. Newman & Co., Calcutta.   | (9) Messrs. M. N. Burman & Co., Bankipur.  |
| (3) Messrs. S. K. Lahiri & Co., College Street, Calcutta.                                      | (10) Babu Ram Dayal Agarwala, 184, Katra Road, Allahabad.                        |
| (4) Messrs. R. Cambray & Co., 6 and 8-2, Hastings Street, Calcutta.                            | (11) Standard Literature Co., Ltd., 13/1, Old Court House Street, Calcutta.      |
| (5) Messrs. Thompson & Co., Madras.  | (12) Manager of the Indian School Supply Depot, 309, Bow Bazar Street, Calcutta. |
| (6) Messrs. D. B. Taraporevala, Sons & Co., 103, Meadow Street, Fort, Post Box No. 18, Bombay. | (13) Messrs. Butterworth & Co., Ltd., 6, Hastings Street, Calcutta.              |
| (7) Messrs. M. C. Sircar & Sons, 75, Harison Road, Calcutta.                                   | (14) Messrs. Ram Krishna & Sons, Anarkali Street, Lahore.                        |

### Agents in England.

- |  |  |
|--|--|
| (1) Messrs. A. Constable & Co., Ltd., 10, Orange Street, Leicester Square, London, W. C.   | (7) Messrs. Henry S. King & Co., 65 Cornhill, London, E. C.              |
| (2) Messrs. Kegan' Paul, Trench, Trubner & Co., 68, Carter Lane, London, E. C. (Oriental Department), and 25, Museum Street, London, W. C. | (8) Messrs. Grindlay & Co., 54, Parliament Street, London, S.W.          |
| (3) Mr. B. Quaritch, 11, Grafton Street, New Bond Street, London, W. C.  | (9) Messrs. W. Thacker & Co., 2, Creed Lane, Ludgate Hill, London, E. C. |
| (4) Messrs. P. S. King & Son, 2 and 4, Great Smith Street, Westminster, London, S. W.  | (10) Messrs. Luzac Co., 46, Great Russell Street, London, W.C.           |
| (5) Mr. B. H. Blackwell, 50-51, Broad Street, Oxford.  | (11) Messrs. Oliver and Boyd, Tweeddale Court, Edinburgh.                |
| (6) Messrs. Deighton Bell & Co., Ltd., Trinity Street, Cambridge.  | (12) Messrs. E. Ponsonby, Ltd., 116, Grafton Street, Dublin.             |
| (13) T. Fisher Unwin, Ltd., 1, Adelphi Terrace, London, W. C.  |  |

### Agents on the Continent.

- |  |   |
|--|---|
| (1) M. Ernest Leroux, 28, Rue Bonaparte, Paris, France | (2) Martinus Nijhoff, The Hague, Holland. |
|--|---|



# ANNUAL VACCINATION REPORT BIHAR AND ORISSA.

FOR THE YEAR

**1920-21.**

---

1. **Staff.**—Dr. S. N. Tiwari was in charge of the Department from 1st April to 11th October 1920 and Major W. C. Ross, I.M.S., from the 12th October 1920 to 31st March 1921.

The office of the Deputy Sanitary Commissioner, North Bihar Circle, was held by Dr. B. P. Muzumdar throughout the year except for two months and seventeen days when he was on privilege leave and Dr. T. Sebastian remained in charge of the Chota Nagpur and Orissa Circle and in supervising charge of the Vaccine Depot during the year except for five months and ten days when he also availed himself of privilege leave and was on special duty at Bhagalpur. The office of the Deputy Sanitary Commissioner, South Bihar Circle, was held by Dr. S. N. Tiwari throughout the year except for a period of less than four months when Dr. C. Trivedi was officiating as Deputy Sanitary Commissioner.

The inspecting staff consisted of 20 District Inspectors of Vaccination and 68 Sub-Inspectors of Vaccination (including three deputed for duty at the Vaccine Depot), in addition to the two Sub-Assistant Surgeons combining vaccination inspection with other duties in Angul. The total number of vaccinators employed in the Province during the year was 1,088 licensed and 227 paid, against 1,067 licensed and 221 paid in the previous year.

In Municipalities and in the district of Puri, vaccination was done by paid vaccinators; but otherwise the work throughout the Province was carried out under the licensing system, except for the employment of paid vaccinators by District Boards, and employed temporarily by Civil Surgeons for short periods to deal with outbreaks of small-pox.

In previous years vaccination in Angul was carried out by paid vaccinators, but the licensing system was introduced during the year under report.

2. **Operations performed.**—The total number of operations performed during the year amounted to 1,060,485 as compared with 1,054,905 last year. The increase amounts to 5,580, which is not very satisfactory as compared with the previous year. Many reports were received of the unwillingness of the people to have their children vaccinated, and of increasing difficulties in realizing fees. As the year was a healthy one, these difficulties cannot be attributed to the prevalence of epidemic disease. They are probably to some extent of an economic nature and due to the increased cost of living, but also to a considerable extent due to political propaganda. Of the total number of operations in the Province, 1,041,481 were performed by the Vaccination Department as compared with 1,020,630 last year. 966,334 operations were primary and 75,147 revaccinations as against 920,075 primary and 100,555 revaccinations last year.

There was an increase of 46,259 in the primary operations and decrease of 25,408 in revaccinations during the year. Of the total operations performed (1,041,481), 1,002,986 equal to 96.29 per cent. were successful as compared with 975,537 equal to 95.58 last year. The number of operations performed in Municipalities fell by 13,184 as compared with last year's returns. The total number of operations performed was 43,903 and the number of successful operations was 36,870, of which 31,541 were primary and 5,329 were revaccinations as compared with 35,428 and 10,372 respectively last year.



The ratios of success in Municipalities were 95·09 per cent. for primary operations and 48·98 per cent. for revaccinations as compared with 96·24 per cent. and 51·15 per cent. respectively last year. The number of operations performed in rural areas was 997,578 as compared with 963,543 last year and the ratios of successes were 99·15 per cent. for primary operations and 62·23 for revaccinations.

**3. Vaccination in Districts.**—Of the three districts of the Patna Division, Shahabad reported a large increase in the number of operations performed (20,229) whilst Patna reported a small increase and Gaya a decrease of over 5,000. Small-pox was prevalent during the year in Gaya.

There was a general moderate increase in the number of operations reported from all the districts of the Tirhut Division.

The districts of the Bhagalpur Division also recorded small increases except Monghyr, in which district considerable difficulty was experienced in carrying out the work of vaccination owing to non-co-operation propaganda.

With the exception of Angul all the districts of Orissa recorded increases in the number of operations, the greatest increase being in Puri.

There was a general fall in the number of operations returned from the districts of Chota Nagpur, the greatest decrease being in Manbhum (18,306).

**4. Vaccination in Towns and Compulsory Areas.**—During the year under report the Vaccination Acts were extended to Husainabad Union in Palamau.

Statement VII shows that during the year, 17,066 children under one year of age, out of an available number of 23,705 or 59·45 per cent. were successfully vaccinated.

The towns of Monghyr, Bhagalpur (again) and Darbhanga (again) show the smallest proportion of work done, and the towns of Chapra, Purnea, Cuttack, Balasore and Hazaribagh have also given unsatisfactory returns.

**5. Work done in the Native States under the Supervision of the Political Agent.**—Vaccination work in the Orissa Feudatory States has steadily developed during recent years under the direction and encouragement of the Political Agent.

Both vaccination and to a large extent revaccination are practically compulsory in the majority of these States.

During the year under report 201,433 primary operations and 348,149 revaccinations were performed as compared with 315,878 and 364,225 respectively in the previous year. As the total population of the Feudatory States is under four millions, these figures are rather extraordinary when compared with the provincial figures, which show a total of roughly one million forty-one thousand operations performed amongst a population of 34,489,846. The number of children born each year in the Feudatory States may be estimated roughly at two lakhs, and of these a considerable number, certainly over 60,000, died in infancy.

**6. Protection of infants.**—During the year under report the number of children under one year available for vaccination was 978,806 and the number of successful operations was 377,981 equal to 386 per thousand, against 327,955 or 391 per thousand successful operations out of 838,706 children available during the previous year. The protection of infants in Municipalities is separately shown in Statement VII. It gives a ratio of 594 per thousand of the surviving infant population as compared with 743 in the previous year.

These figures are unsatisfactory as they show that more than half the total number of operations are performed on children over one year of age, whilst the ratio of protected children under one year of age has fallen to below 50



per thousand, the total number of operations performed is still in excess of the total number of infants available, as it always has been. In previous years the excess has been very marked, and as there has been a constant excess it must be inferred that the returns are to that extent on the average fictitious.

Civil Surgeons and Deputy Sanitary Commissioners are unanimous in attributing the opposition to vaccination to be concerned more with the age of the child than with the operation itself, and, in view of the strong popular prejudice which exists against the vaccination of infants at an early age, I consider that it is desirable that the Vaccination Act should be amended so as to raise the age for compulsory vaccination to one year instead of six months.

**7. Incidence and Mortality of Small-pox.**—During the last ten years the total number of deaths from small-pox in the districts of this Province has been 94,305.

During the first quinquennium the number of deaths were 33,783 and during the second 60,522. In each of the last five years the mortality was as follows :—9,742, 6,687, 6,205, 18,514 and 19,374.

The provincial ratios of the mortality from small-pox per thousand of population during the last five years have been .28, .19, .17, .53 and .56 respectively.

**8. Prevention of Small-pox.**—The constant and considerable mortality noted in the preceding paragraph is, in my opinion, a complete demonstration both of the insufficiency and of the inefficiency of the existing arrangements for vaccination.

It is well known—in fact it is an admitted axiom—that thorough vaccination can and does stamp out small-pox altogether, and in the light of that knowledge, and in face of the above facts, there is great necessity for a more definite vaccination policy.

I do not consider that small-pox can be effectively dealt with and stamped out unless vaccination is made compulsory throughout the Province, and I would recommend that the Vaccination Act should be modified so as to extend the age within which vaccination is required, to one year, and should be generally enforced ; that vaccination should be free ; and that the supervision and control of vaccination should be delegated to District Boards and Municipalities and their Health Officers.

**9. Inspection of Work.**—During the year under report the Deputy Sanitary Commissioners inspected 145,627 primary vaccinations as against 24,905 in the previous year. The increase is considerable and satisfactory. The inspecting work done by the Deputy Sanitary Commissioners has been comprehensive and they have submitted valuable reports on the efficiency of the staff and the arrangements in 19 out of the 21 districts in the Province.

The Civil Surgeons of the Province inspected 53,177 primary and 9,047 revaccination operations against 50,044 primary and 9,065 revaccination last year. It should be noted that the methods of inspection of Civil Surgeons and Deputy Sanitary Commissioners are different. Civil Surgeons inspect the new work which has just been done and the numbers returned by them are therefore smaller, whereas Deputy Sanitary Commissioners inspect all the children under ten years of age, and look at old work as well as new work and also look for unvaccinated children and children who are marked with small-pox, and they also examine vaccinators' registers and other records in the villages where they can be verified and checked.

**10. Officers of the Inspecting staff.**—The officers of the inspecting staff have not yet attained to a very satisfactory standard of efficiency. A few of them are energetic and capable, and these men are being rapidly promoted and put in the most responsible positions. The majority, however, are careless and negligent and do not attempt to carry out their duties honestly and efficiently. The supervision and control of a large staff which is distributed throughout the Province is a matter of considerable difficulty for a central



office with only three Deputy Sanitary Commissioners to carry on the work, and it is only possible to attain a moderate degree of efficiency by strict enforcement of the departmental rules and regulations and standing orders.

**II. Supply of Vaccine.**—The Vaccine Dépôt at Namkum supplied the Province with vaccine throughout the year. A large supply of vaccine is held in reserve and the necessary stores and supplies for manufacture are in ample stock. 1,869,908 doses of vaccine were manufactured during the year as compared with 3,504,589 doses last year. The number of doses issued was 2,628,548 against 2,599,744 in 1919-20. The number of doses in stock at the end of the year was 1,493,759. The number of calves used during the year was 362 as compared with 602 in the previous year, and the average yield of crude vaccine was over 55 grammes per calf as compared with 48·6 grammes in the previous year. The number of calves required has been considerably reduced by improvement in the technique of operating and by the better feeding of calves, and the working costs are therefore low and compare most favourably with the costs of production in other provinces. The working costs of the dépôt for the year amounted to Rs. 24,923 as compared with Rs. 25,048 in the previous year. The average cost of the vaccine per dose works out at 2·5 pies on the gross expenditure and to ·5 pie on the net expenditure when the receipts are taken into account.

**12. Vaccine Depot and Cold Storage.**—The Vaccine Dépôt was closed for manufacture twice during the working season in November and January on account of outbreaks of rinderpest. There were 65 attacks and 12 deaths during the two epidemics. The work of manufacture was seriously interfered with during the working season and considerable loss was incurred on account of the interruption of work, the deaths of calves, and the loss of vaccine.

During the year under report cholera vaccine and influenza vaccine were stored in the dépôt and issued throughout the Province as required.

A class for the training of candidates for the vaccination inspecting cadre was held in February and March and seven candidates were trained and qualified.

The cold-storage plant, which is essential for the preservation of the vaccine, gave trouble throughout the year and was with difficulty kept going until the end of the working season. The plant has now been dismantled and is under repair, and the reserve stock of vaccine is in cold storage in Calcutta.

**13. Experimental work.**—Further experimental work was carried out at the dépôt during the year with some interesting results. With a view to producing a cleaner and purer vaccine, disinfectants were experimented with and it was found that the addition of 2 per cent. boric acid improved the quality of the vaccine by diminishing the number of other organisms present without decreasing its potency. After being kept in cold storage for six months the boric vaccine gave cleaner and better vaccination marks than the ordinary vaccine.

Experiments were also made with a view to producing a less fluid vaccine as there is a considerable wastage at present owing to the careless handling of the tubes by the vaccinators. It was found that a mixture of 5 per cent. starch and 2 per cent. boric acid with 93 per cent. water after boiling can be used to dilute and thicken the crude glycerinated vaccine with good results and without impairing its potency.

Further experiments are being made with this mixture before it is adopted for general issue, and if the results are satisfactory, a thicker and purer vaccine will be issued next season.

**14. Cost of the Department.**—The total cost of the Vaccine Department (excluding the Vaccine Dépôt) during the year, as detailed in Statement II, was Rs 1,56,912 or Rs. 41,180 more than the previous year. The increase in cost was due to the increased rate of pay sanctioned by Government to the inspecting staff.



The cost per successful operation was 2 anna 5 pies against 1 anna 10 pies in the previous year. The increase in rate is due to the increased rate of pay.

**15. General.**—Owing to the lateness of the Puja holidays the work of vaccinators did not begin until November and it was considerably interfered with throughout the season by the increasing hostility of the people in various parts of the Province and by the discontent of the vaccinators caused by increasing difficulties in realization of fees. The latter difficulty was to some extent overcome by the sanction of a bonus of Rs. 20 to each vaccinator who worked satisfactorily during the season.

The results of the year's working in face of these difficulties are on the whole satisfactory. It is, however, a matter for serious consideration as to how long the existing arrangements can continue to work satisfactorily. The vaccinators are underpaid and discontented and find difficulty in many districts in realizing their fees. An increase in the rate of fee is necessary if the work is to continue under the present system, but I do not consider that this course will solve the ultimate problem, and I recommend a change of policy from the licensing system to a system of free vaccination under the supervision and control of the District Boards.

In conclusion, I desire to bring to the notice of Government the large amount of useful work done by the three Deputy Sanitary Commissioners during the year in inspecting work and reporting on the efficiency of the staff and work in almost all the districts of the Province. Dr. C. N. Banerjee has also carried out his duties as Superintendent of the Vaccine Depôt in a capable and satisfactory manner.

W. C. ROSS, MAJOR, I.M.S.,

*Sanitary Commissioner.*







---

**STATEMENT I.**

---



## STATEMENT NO. I.—Showing particulars of Vaccination in the

Number.	District.	Population of district according to the census of 1911.	Average population per square mile.	Average number of vaccinators employed throughout the season.	Total number of persons vaccinated.			Average number of persons vaccinated by each vaccinator.	Total.	Primary
					Male.	Female.	Total.			
1	2	3	4	5	6			7	8	
Patna Division.										
1	Patna ...	{ By paid Vaccinators ... By licensed Vaccinators ... }	1,609,631	777	{ 22 60 }	9,537 28,223	8,369 26,591	17,906 54,814	814 913	16,294 54,682
2	Gaya ...	{ By paid Vaccinators ... By licensed Vaccinators ... }	2,161,010	458	{ 14 81 }	4,484 26,566	4,032 24,864	8,496 51,430	607 635	8,067 51,341
3	Shahabad ...	{ By paid Vaccinators ... By licensed Vaccinators ... }	1,865,860	426	{ 7 99 }	1,934 32,175	1,623 26,459	3,557 58,634	508 592	3,392 58,623
Total of Patna Division		{ By paid Vaccinators ... By licensed Vaccinators ... }	5,636,301	505	{ 43 240 }	15,935 83,964	14,024 77,914	29,959 164,878	696 687	27,753 164,646
Tirhut Division.										
4	Saran ...	{ By paid Vaccinators ... By licensed Vaccinators ... }	2,289,778	853	{ 8 87 }	2,305 34,054	1,607 31,595	3,912 65,649	489 754	2,880 65,442
5	Champaran ...	{ By paid Vaccinators ... By licensed Vaccinators ... }	1,903,385	540	{ 4 66 }	3,743 27,231	2,679 24,575	6,425 51,806	1,605 785	4,104 51,076
6	Muzaffarpur ...	{ By paid Vaccinators ... By licensed Vaccinators ... }	2,845,514	937	{ 12 75 }	3,918 43,418	2,424 40,857	6,342 84,275	528 1,102	3,333 84,255
7	Darbhanga ...	{ By paid Vaccinators ... By licensed Vaccinators ... }	2,929,682	875	{ 7 88 }	1,760 46,766	1,141 44,188	2,901 90,954	414 1,033	2,020 90,500
Total of Tirhut Division		{ By paid Vaccinators ... By licensed Vaccinators ... }	9,973,359	791	{ 31 316 }	11,729 151,469	7,851 141,215	19,580 292,684	631 926	12,237 291,273
Bhagalpur Division.										
8	Monghyr ...	{ By paid Vaccinators ... By licensed Vaccinators ... }	2,131,381	543	{ 7 30 }	1,332 26,957	1,163 25,758	2,495 52,715	356 1,757	2,421 52,629
9	Bhagalpur ...	{ By paid Vaccinators ... By licensed Vaccinators ... }	2,139,318	506	{ 11 63 }	1,786 27,357	1,309 26,872	3,095 54,029	281 857	2,519 53,802
10	Purnea ...	{ By paid Vaccinators ... By licensed Vaccinators ... }	1,989,637	398	{ 12 52 }	8,249 24,854	3,854 22,032	12,103 46,886	1,008 901	1,883 44,479
11	Santal Parganas ...	{ By paid Vaccinators ... By licensed Vaccinators ... }	1,882,781	344	{ 8 61 }	2,709 23,370	2,020 21,182	4,729 44,552	591 730	2,692 38,232
Total of Bhagalpur Division		{ By paid Vaccinators ... By licensed Vaccinators ... }	8,143,117	437	{ 38 206 }	14,076 102,538	8,346 95,644	22,422 198,182	590 962	9,515 189,142
Orissa Division.										
12	Cuttack ...	{ By paid Vaccinators ... By licensed Vaccinators ... }	2,109,139	577	{ 11 64 }	4,078 29,422	3,529 25,499	8,207 54,921	746 844	3,509 54,150
13	Balasore ...	{ By paid Vaccinators ... By licensed Vaccinators ... }	1,055,538	506	{ 5 32 }	5,127 11,843	2,456 10,431	7,583 22,279	1,516 696	1,385 19,266
14	Angul ...	By licensed Vaccinators ...	199,405	118	12	2,253	2,154	4,407	367	4,116
15	Puri ...	By paid Vaccinators ...	1,023,402	409	29	23,065	20,124	43,189	1,489	39,344
16	Sambalpur ...	{ By paid Vaccinators ... By licensed Vaccinators ... }	744,193	194	{ 6 42 }	571 8,991	461 8,869	1,032 17,860	172 423	721 17,780
Total of Orissa Division		{ By paid Vaccinators ... By licensed Vaccinators ... }	5,131,707	373	{ 51 150 }	33,441 52,514	26,570 46,953	60,011 99,467	520 662	44,959 95,322



*districts of Bihar and Orissa during the year 1920-21.*

Vaccination.				Re-vaccination.			Percentage of successful cases in which the results were known.		Persons successfully vaccinated per 1,000 of population.	Percentage of unknown cases to total cases.		Average annual number of persons successfully vaccinated during previous five years.		Average annual number of deaths from small-pox during previous five years.	
Successful				Total.	Successful.	Unknown.	Primary.	Re-vaccination.		Primary.	Re-vaccination.	Number.	Ratio per 1,000 of population.	Number.	Ratio per 1,000 of population.
Under one year.	One year and under six years.	Total of all ages.	Unknown.												
9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
7,950	7,400	15,597	320	1,612	802	216	07·63	65·32	44·50	1·06	13·39	68,389	42·48	665	·42
21,650	31,907	54,122	176	132	94	...	90·29	71·21		·32	...				
3,695	4,474	7,927	120	429	341	24	90·74	84·19	28·19	1·48	5·59	63,317	29·29	901	·41
13,859	36,232	50,073	127	89	83	2	99·52	95·40		·24	2·24				
2,322	938	3,360	4	165	56	5	99·17	35·00	33·45	12	3·03	50,414	27·02	498	·21
22,299	29,291	58,428	12	11	3	...	99·68	27·27		·02	...				
13,367	12,812	26,884	444	2,206	1,286	245	98·44	65·74	34·54	1·50	11·10	182,120	32·31	1,994	·35
57,808	97,430	163,523	315	232	180	2	09·50	78·26		·19	·86				
1,379	1,272	2,727	52	1,032	347	239	96·42	43·75	29·09	1·80	23·15	73,110	31·95	354	·15
19,933	41,893	64,420	436	207	79	8	99·09	39·69		·66	3·86				
1,965	1,938	4,030	31	2,321	1,134	280	98·42	55·56	29·82	·75	12·06	54,550	28·58	238	·12
21,335	29,100	50,995	22	730	309	79	99·88	47·48		·04	10·82				
1,560	1,524	3,121	3	3,109	1,951	101	06·62	64·86	31·35	·09	3·24	99,614	31·84	383	·13
21,923	64,515	83,786	10	20	7	...	99·45	35·00		·10	...				
545	1,462	2,008	...	881	261	204	99·40	42·30	31·90	...	29·96	91,957	31·38	507	·19
15,386	74,777	90,302	8	454	296	...	09·79	65·19		·008	...				
5,449	6,196	11,895	86	7,343	3,693	894	97·99	57·19	38·84	·79	12·03	310,231	31·10	1,542	·15
78,577	207,195	289,503	476	1,411	691	87	90·55	52·19		·16	6·16				
1,104	1,289	2,399	5	74	23	3	99·29	32·39	25·83	·20	4·05	67,996	31·90	425	·19
13,902	38,709	52,627	2	86	55	15	100·	77·43		·003	17·44				
1,174	1,225	2,417	68	576	303	24	98·61	54·89	27·19	2·46	4·16	65,074	30·41	496	·28
25,957	27,690	53,771	10	227	122	23	99·93	59·80		·01	10·13				
933	865	1,851	18	10,220	4,670	863	99·24	50·00	26·10	·95	8·44	51,654	26·96	1,137	·57
21,955	21,889	44,108	61	2,407	1,292	106	99·30	56·14		·13	4·40				
1,360	1,238	2,658	9	2,037	1,307	234	99·06	74·55	24·35	·33	13·94	50,492	26·81	495	·20
19,783	17,767	37,769	189	6,320	3,923	619	09·27	68·90		·49	9·79				
4,571	4,617	9,325	100	12,907	6,312	1,174	99·04	55·61	25·92	1·65	9·09	235,216	28·88	2,553	·31
81,597	106,005	188,275	262	9,040	5,397	763	99·08	65·20		·13	8·44				
1,401	1,642	3,304	162	4,698	2,244	1,032	98·71	62·05	28·81	4·61	32·03	66,474	31·51	1,594	·75
24,165	27,500	53,744	272	771	562	82	99·75	81·56		·50	10·63				
295	924	1,358	10	6,198	4,297	436	98·76	74·40	26·13	·72	7·03	25,933	24·56	453	·42
3,632	14,131	19,139	60	3,013	2,287	899	09·65	87·49		·31	13·24				
1,423	2,456	3,887	58	291	173	30	95·78	66·28	20·36	1·40	10·30	7,671	38·46	54	·27
12,640	20,995	38,383	777	3,845	2,576	709	99·47	82·14	40·28	1·97	18·43	83,589	32·82	1,020	·29
658	138	704	10	311	197	71	99·01	82·08	24·89	1·38	22·82	19,017	25·55	427	·57
13,167	3,970	17,145	319	70	69	...	93·13	88·57		1·78	...				
14,903	23,699	43,729	959	15,052	9,304	2,298	99·36	72·94	29·65	2·13	15·20	152,684	29·75	3,548	·60
42,387	48,051	93,915	709	4,145	3,091	511	99·26	85·05		·74	12·32				



## STATEMENT No. I.—Showing particulars of Vaccination in the

Number.	District.	Population of district according to the census of 1911.	Average population per square mile.	Average number of vaccinators employed throughout the season.	Total number of persons vaccinated.			Average number of persons vaccinated by each vaccinator.	Primary	
					Male.	Female.	Total.		Total.	
1	2	3	4	5	6			7	8	
Chota Nagpur Division.										
17	Hazaribagh ...	{ By paid Vaccinators ... By licensed Vaccinators ... }	1,288,609	183	{ 7 45 }	2,473 13,293	1,629 11,552	4,102 24,845	586 552	1,685 22,428
18	Ranchi ...	{ By paid Vaccinators ... By licensed Vaccinators ... }	1,387,073	195	{ 3 49 }	946 29,016	663 17,638	1,609 37,654	536 768	1,199 35,088
19	Palamau ...	{ By paid Vaccinators ... By licensed Vaccinators ... }	687,710	139	{ 8 25 }	3,531 9,051	1,662 7,244	5,193 16,295	649 652	737 16,526
20	Manbhum ...	{ By paid Vaccinators ... By licensed Vaccinators ... }	1,547,576	373	{ 35 36 }	9,803 14,357	8,112 13,185	17,915 27,542	512 765	13,149 26,809
21	Singhbhum ...	{ By paid Vaccinators ... By licensed Vaccinators ... }	694,394	178	{ 4 21 }	464 9,776	888 8,515	8 52 18,291	213 871	761 14,105
Total of Chota Nagpur Division.		{ By paid Vaccinators ... By licensed Vaccinators ... }	5,605,362	206	{ 57 176 }	17,217 66,493	12,454 58,134	29,671 124,627	520 708	17,531 113,956
Total of Vaccine Department.		{ By paid Vaccinators ... By licensed Vaccinators ... Total ... }	34,489,846	414	{ 220 1,088 1,308 }	92,398 459,978 552,376	69,245 419,860 489,105	161,643 879,838 1,041,481	734 808 796	111,995 854,339 966,334
Total Dispensary Department		...	...	...	1	201	171	372	372	262
Total Railways		...	...	...	1	607	307	914	914	713
Total Cooly Department		...	...	...	3	2,245	1,368	3,613	1,204	487
Total Jails and Cantonments		...	...	...	2	13,387	718	14,105	(a)381	1,927
Grand Total		...	...	...	1,315	568,816	491,669	1,060,485	806	969,723

(a) Cantonments only.



*district of Bihar and Orissa during the year 1920-21—concl'd.*

Vaccination.				Re-vaccination.			Percentage of successful cases in which the results were known.		Persons successfully vaccinated per 1,000 of population.	Percentage of unknown cases to total cases.		Average annual number of persons successfully vaccinated during previous five years.		Average annual number of deaths from small-pox during previous five years.	
Successful.				Total.	Successful.	Unknown.	Primary.	Re-vaccination.		Primary.	Re-vaccination.	Number.	Ratio per 1,000 of population.	Number.	Ratio per 1,000 of population.
Under one year.	One year and under six years.	Total of all ages.	Unknown.												
9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
596	982	1,669	14	2,417	1,584	436	99.58	79.95	22.60	.83	18.03	59,855	30.92	274	.21
12,144	9,945	22,427	...	2,417	2,214	102	99.99	95.63		...	4.22				
1,062	110	1,180	...	410	255	37	98.41	68.36	27.72	...	9.02	43,660	31.47	324	.23
27,532	7,414	35,086	1	2,566	1,744	199	99.99	73.67		.002	7.75				
246	318	658	34	4,456	2,541	1,094	93.59	75.58	28.13	4.61	24.55	25,188	36.62	236	.34
10,359	4,083	15,374	116	769	539	86	99.76	78.91		.74	11.18				
5,395	7,045	12,709	279	4,766	2,484	678	98.74	60.76	27.90	2.12	14.22	50,288	32.49	428	.27
12,985	12,959	26,795	...	733	713	3	99.94	97.67		...	.40				
412	314	731	11	91	17	9	97.46	20.73	25.95	1.41	9.90	17,993	25.91	260	.37
8,591	5,351	14,050	6	4,186	3,210	365	99.65	84.00		.04	8.71				
7,711	8,769	16,947	338	12,140	6,881	2,254	98.56	34.58	26.42	1.92	18.56	176,984	31.57	1,522	.27
71,611	39,752	113,732	123	10,671	8,420	755	99.03	84.92		.10	7.07				
46,001	56,093	108,780	1,927	49,618	27,479	6,855	98.82	64.07	29.39	1.72	13.78	1,057,235	30.65	11,159	.32
331,980	498,433	848,948	1,885	25,499	17,779	2,118	99.47	76.04		.22	8.30				
377,981	554,526	957,728	3,812	75,147	45,258	8,073	99.39	68.30		.39	11.94				
138	124	262	...	110	84	4	100.	79.24	...	...	3.63	...	...	...	...
676	...	676	...	201	166	...	94.81	82.58	...	...	...	...	...	...	...
8	6	24	462	3,126	8	3,113	96.00	100.	...	94.86	99.74	...	...	...	...
239	113	1,831	41	12,178	7,659	1,049	92.86	69.17	...	5.04	9.20	...	...	...	...
379,042	554,769	960,521	4,315	90,762	53,175	13,144	99.49	68.50	...	.44	14.49	...	...	...	...



## Summary.

	Total number of persons vaccinated.		Total number of operations performed.		Percentage of successful cases in which the results were known.		Average number of persons vaccinated by each vaccinator.		Number of children successfully vaccinated.		Ratio of successful vaccinations per 1,000 of population.	Total cost of Department.	Average cost of each successful case.
	Primary.	Re-vaccination.	Primary.	Re-vaccination.	Primary.	Re-vaccination.	Vaccinators employed.	Persons vaccinated by each vaccinator.	Under one year.	One and under 6 years.			
1	2	3	4	5	6	7	8	9	10	11	12	13	14
BY SPECIAL STAFF.												Rs. a. p.	Rs. a. p.
Statement (I) ...	966,334	75,147	966,334	75,147	99.39	68.30	1,308	796	377,931	554,526			
BY DISPENSARY STAFF.													
Statement III ...	262	110	262	110	100.00	79.24	(a) 1	372	138	124	29.39	1,56,912 5 8	0 2 5
BY OTHER AGENCIES.													
Railways, Cooly Depot, Jails and Cantonments.	3,127	15,505	3,127	15,505	80.94	50.51	(b) 6	881	923	119			
Total ...	969,723	90,762	969,723	90,762	99.49	68.50	1,315	806	379,042	554,769	29.39	1,56,912 5 8	0 2 5

(a) Darbhanga only.

(b) Cooly Department, Rails and Cantonments only.



---

STATEMENT II.

---



## STATEMENT No. II.—Showing the cost of vaccination in the

No.	Circle and district.	European supervising officer.	Expen										
			Pay.	Native supervising officer.	Pay.	Paid vaccinators.	Pay.	Licensed vaccinators.	Pay.	Clerks.	Pay.	Peons, etc.	Pay.
1	2	3	4	5	6	7	8	9	10	11	12	13	14
					Rs. a. p.		Rs. a. p.		Rs. a. p.		Rs. a. p.		Rs. a. p.
PATNA DIVISION.													
1	Patna ... ..	...	...	6	2,858 0 0	23	2,196 2 0	60	1,912 12 0	...	...	1	36 0 0
2	Gaya ... ..	...	...	5	3,318 7 6	14	1,463 9 0	81	...	...	...	2	192 0 0
3	Shahabad ... ..	...	...	5	2,564 7 5	7	640 0 0	99	506 6 0	...	...	...	...
	Total of Patna Division	...	...	16	8,740 14 11	44	4,299 11 0	240	2,419 2 0	...	...	3	228 0 0
TIRHUT DIVISION.													
4	Saran ... ..	...	...	4	2,620 0 0	8	604 0 0	87	1,725 0 0	...	...	...	...
5	Champaran ... ..	...	...	3	1,520 0 0	4	484 8 0	66	1,435 12 0	...	...	...	...
6	Muzaffarpur ... ..	...	...	4	2,758 0 0	12	1,570 10 8	75	1,490 0 0	...	...	...	...
7	Darbhanga ... ..	...	...	4	2,170 0 0	8	660 0 0	88	1,596 6 0	1	60 0 0	1	24 0 0
	Total of Tirhut Division	...	...	15	9,068 0 0	32	3,319 2 8	316	6,247 2 0	...	60 0 0	1	24 0 0
BHAGALPUR DIVISION.													
8	Monghyr ... ..	...	...	4	2,100 0 0	7	1,072 15 2	30	1,140 0 0	...	...	2	108 0 0
9	Bhagalpur ... ..	...	...	5	3,355 9 2	11	1,085 8 9	63	...	...	...	...	...
10	Purnea ... ..	...	...	4	2,034 12 0	12	1,424 15 0	52	876 4 0	...	...	...	...
11	Santal Parganas ... ..	...	...	7	3,438 7 9	8	1,071 12 6	61	97 0 0	...	...	...	...
	Total of Bhagalpur Division	...	...	20	10,978 12 11	38	4,655 3 5	206	2,113 4 0	...	...	2	108 0 0
ORISSA DIVISION.													
12	Cuttack ... ..	...	...	4	1,831 8 0	11	1,470 11 4	64	1,090 0 0	...	...	...	...
13	Balasore ... ..	...	...	3	2,131 7 0	6	690 14 8	32	560 0 0	...	...	...	...
14	Angul ... ..	...	...	3	2,312 1 9	...	304 0 0	12	220 0 0	...	...	...	...
15	Puri ... ..	...	...	3	1,740 0 0	29	3,771 14 4	...	...	...	...	...	...
16	Sambalpur ... ..	...	...	3	1,562 6 7	6	768 10 2	42	...	...	...	2	40 0 0
	Total of Orissa Division	...	...	16	9,627 7 4	52	7,006 2 6	150	1,870 0 0	...	...	2	140 0 0
CHOTA NAGPUR DIVISION.													
17	Hazaribagh ... ..	...	...	4	1,920 0 0	9	514 8 4	45	...	...	...	...	...
18	Ranchi ... ..	...	...	5	3,260 14 2	4	765 13 1	49	...	...	...	...	...
19	Palamau ... ..	...	...	3	1,690 13 4	9	1,044 1 7	25	...	...	...	...	...
20	Manbhum ... ..	...	...	5	2,318 15 11	35	5,754 5 10	36	...	...	...	...	...
21	Singhbhum ... ..	...	...	3	1,468 12 0	4	270 0 0	21	57 14 0	...	...	...	...
	Total of Chota Nagpur Division	...	...	20	10,659 7 5	61	8,318 12 10	176	57 14 0	...	...	...	...
	Total of Vaccine Circle	...	...	87	49,074 10 7	227	27,620 0 5	1,088	12,776 0	1	60 0 0	8	400 0 0
ESTABLISHMENT OF THE DEPUTY SANITARY COMMISSIONER, NORTH BIHAR CIRCLE.													
	DITTO SOUTH BIHAR CIRCLE	...	...	1	8,343 11 11	...	...	...	...	2	1,210 1 6	2	265 8 0
	DITTO CHOTA NAGPUR AND ORISSA CIRCLE.	...	...	1	10,066 15 5	...	...	...	...	2	1,258 13 7	2	255 14 5
	DITTO CHOTA NAGPUR AND ORISSA CIRCLE.	...	...	1	9,674 6 8	...	...	...	...	2	1,220 15 6	2	271 1 7
	Total	...	...	3	28,085 2 0	...	...	...	...	6	3,689 14 7	6	792 8 0
	Total of Province	...	...	90	77,159 12 7	227	27,629 0 5	1,088	12,707 6 0	7	3,749 14 7	14	1,192 8 0



## Province of Bihar and Orissa during the year 1920-21.

diture.					Paid from							Number of all successful vaccinations and re-vaccinations.	Average cost of each successful case.
Total pay of establishment.	Travelling allowance.	Contingencies.		Total cost.	Imperial Fund.	Provincial Fund.	Local Fund.	Municipalities.	Native States.	Total.			
		Cost of lymph.	Other contingencies.										
13	14	15	16	17	18	19	20	21	22	23	24	25	
Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.		Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.		Rs. a. p.	
7,002 14 0	548 5 6	...	235 9 6	7,781 6 13 0	...	5,536 3 6	1,953 0 0	1,197 9 6	...	7,783 13 0	71,340	0 1 9	
4,974 0 6	675 13 3	...	319 5 9	5,969 3 6	...	4,114 4 9	1,118 12 6	736 2 3	...	5,969 3 6	60,9 8	0 1 7	
3,710 13 5	1,503 13 11	...	124 5 0	5,342 0 4	...	4,537 4 5	...	774 11 11	...	5,342 0 4	62,416	0 1 4	
15,687 11 11	2,731 0 8	...	679 4 3	19,093 0 10	...	14,217 12 8	2,171 12 6	2,703 7 8	...	19,093 0 10	194,696	0 1 6	
4,949 0 0	503 12 0	...	404 0 0	5,853 12 0	...	4,765 12 0	180 0 0	908 0 0	...	5,853 12 0	68,000	0 1 4	
3,440 4 0	1,103 0 0	...	113 6 0	4,656 10 0	...	4,148 12 0	151 0 0	353 14 0	...	4,656 10 0	56,914	0 1 3	
5,818 10 8	556 0 0	...	225 12 6	6,000 7 2	...	4,930 0 0	684 10 8	1,015 12 0	...	6,000 7 2	89,230	0 1 2	
4,510 6 0	1,316 14 0	66 0 0	150 0 0	6,043 4 0	...	5,173 4 0	60 0 0	810 0 0	...	6,043 4 0	98,468	0 1 4	
18,718 4 8	3,476 10 0	66 0 0	893 2 6	23,154 1 2	...	16,9 7 12 0	1,078 10 8	3,987 10 6	...	23,154 1 2	307,612	0 1 2	
4,420 15 2	1,719 12 0	...	261 0 0	6,392 11 2	...	5,030 12 0	538 5 11	823 9 3	...	6,392 11 2	55,104	0 1 10	
4,441 1 11	633 2 6	...	1,882 0 6	6,356 4 11	...	5,157 2 8	529 14 3	6 9 4 0	...	6,356 4 11	58,176	0 1 9	
4,335 15 0	1,346 10 8	...	230 14 6	5,913 8 2	...	4,328 8 3	668 6 5	916 9 6	...	5,913 8 2	51,930	0 1 9	
4,657 4 3	2,337 8 10	...	148 8 0	7,143 5 1	...	6,038 0 7	493 14 0	698 6 6	...	7,143 5 1	45,864	0 2 6	
17,855 4 4	6,028 2 0	...	1,922 7 0	25,805 13 4	...	20,554 7 6	2,233 8 7	3,017 13 3	...	25,805 13 4	211,074	0 1 11	
4,442 3 4	722 7 11	...	205 2 0	5,369 13 3	...	3,823 15 0	867 11 10	678 2 5	...	5,369 13 3	60,775	0 1 4	
3,382 5 8	3 9 7 0	...	60 0 0	3,791 12 8	...	3,103 14 0	423 14 8	267 0 0	...	3,791 12 8	27,597	0 2 2	
2,836 1 9	695 7 0	...	40 0 0	3,571 8 9	...	3,571 8 9	...	...	...	3,571 8 9	4,060	0 1 4	
5,511 14 4	1,444 14 0	...	90 0 0	7,046 12 4	...	3,274 14 0	3,538 14 4	183 0 0	...	7,046 12 4	41,225	0 2 9	
2,371 0 9	429 5 5	...	92 7 0	2,892 13 2	...	2,035 8 0	559 10 2	297 11 0	...	2,892 13 2	18,523	0 2 5	
18,543 9 10	3,641 9 4	...	487 9 0	2,672 12 2	...	15,803 11 9	5,440 8 0	1,425 13 5	...	22,672 12 2	152,180	0 2 4	
2,434 8 4	1,378 3 0	...	109 14 11	3,922 10 3	...	3,408 1 11	260 3 5	254 4 11	...	3,922 10 3	29,123	0 2 1	
4,026 11 3	473 13 0	...	89 15 9	4,590 8 0	...	3,824 10 11	...	765 13 1	...	4,590 8 0	38,450	0 1 11	
2,734 14 11	873 14 11	...	75 0 0	3,613 13 10	...	2,569 12 3	709 10 3	334 7 4	...	3,613 13 10	19,346	0 2 11	
8,073 5 9	1,040 12 9	...	70 0 0	9,184 2 6	...	3,429 12 8	5,412 12 11	341 8 11	...	9,184 2 6	43,192	0 3 4	
1,796 10 0	889 13 4	...	81 7 0	2,767 14 4	...	2,436 7 4	45 0 0	236 7 0	...	2,767 14 4	18,023	0 2 5	
19,066 2 3	4,586 9 0	...	426 5 8	24,079 0 11	...	15,718 13 1	6,427 19 7	1,932 9 3	...	24,079 0 11	148,134	0 2 7	
99,871 1 0	20,463 15 0	68 0 0	4,408 12 5	114,809 13 5	...	85,285 9 0	17,351 13 4	12,172 6 1	...	1,14,809 12 5	1,013,696	0 1 9	
9,819 5 5	2,227 12 6	...	609 0 3	12,656 2 2	...	12,656 2 2	...	...	...	12,656 2 2	...	...	
11,531 11 5	2,631 9 9	...	933 14 9	15,147 3 11	...	15,147 3 11	...	...	...	15,147 3 11	...	...	
11,166 7 9	2,708 12 5	...	423 15 0	14,299 3 2	...	14,299 3 2	...	...	...	14,299 3 2	...	...	
32,567 8 7	7,568 2 8	...	1,966 14 0	42,102 9 3	...	42,102 9 3	...	...	...	42,102 9 3	...	...	
1,22,438 9 7	28,032 1 8	66 0 0	6,375 10 6	1,56,912 5 8	...	1,27,368 2 3	17,351 13 4	12,172 6 1	...	1,56,912 5 8	10,13,696	0 2 5	



## B.—DISPENSARY VACCINATION.

STATEMENT No III.—Showing Dispensary Vaccination in the Province of Bihar and Orissa during the year 1920-21.

District.	Number of dispensaries in each district to which a vaccinator is attached.	Average number of vaccinators attached to dispensaries during the year.	Total number of persons vaccinated.	Average number of persons vaccinated by each vaccinator.	Primary vaccination.					Re-vaccination.			Percentage of successful cases in which the results were known.		Percentage of unknown cases to total cases.	
					Total.	Successful.			Unknown.	Total.	Successful.	Unknown.	Primary.	Re-vaccination.	Primary.	Re-vaccination.
						Under one year.	One and under six years.	Total of all ages.								
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Patna ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Gaya ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Shahabad ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Saran ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Champaran ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Muzaffarpur ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Darbhanga ...	1	1	372	372	262	139	124	262	...	110	84	4	100·00	79·24	...	3·63
Monghyr ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Bhagalpur ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Purnea ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Santal Parganas ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Cuttack ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Balasore ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Angul ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Puri ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Sambalpur ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Hazaribagh ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Ranchi ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Palaman ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Manbhum ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Singhbhum ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Total ...	1	1	372	372	262	139	124	262	...	110	84	4	100·00	79·24	...	3·63



---

COMPARATIVE STATEMENT No. IV.

---

COMPARATIVE STATEMENT NO. IV.—Showing the number of persons primarily vaccinated, and the number of those per

Establishment.	Persons primarily vaccinated.							
	1911-12		1912-13		1913-14		1914-15	
	Total Number.	Number successfully vaccinated.	Total number.	Number successfully vaccinated.	Total number.	Number successfully vaccinated.	Total number.	Number successfully vaccinated.
1	2	3	4	5	6	7	8	9
Government ... ..	...	...	...	...	...	...	649	515
Municipal ... ..	46,769	44,879	43,379	42,311	41,167	42,480	47,235	45,310
Local Fund ... ..	96,381	95,057	86,551	85,965	82,592	81,790	76,264	75,263
Dispensaries ... ..	384	303	188	185	186	186	178	176
Licensed Vaccinators ... ..	1,135,713	1,128,318	1,133,310	1,126,927	1,149,467	1,143,922	1,114,753	1,109,554
Total ... ..	1,279,247	1,268,497	1,263,428	1,255,388	1,276,412	1,268,368	1,239,079	1,230,821



sons who were successfully vaccinated in the Province of Bihar and Orissa in each of the undermentioned official years.

vaccinated.

1915-16		1916-17		1917-18		1918-19		1919-20		1920-21	
Total number.	Number successfully vaccinated.	Total number.	Number successfully vaccinated.	Total number.	Number successfully vaccinated.	Total number.	Number successfully vaccinated.	Total number.	Number successfully vaccinated.	Total number.	Number successfully vaccinated.
10	11	12	13	14	15	16	17	18	19	20	21
10,277	10,046	3,963	3,441	6,984	6,050	6,637	5,941	7,363	6,520	1,927	1,831
43,099	41,661	38,645	37,226	37,586	36,107	36,573	35,213	36,810	35,428	32,858	31,541
94,056	84,656	80,353	73,103	82,772	77,911	59,639	56,495	69,847	66,946	80,337	77,939
285	216	202	202	181	177	139	139	178	178	262	262
1,065,023	1,059,266	922,991	913,264	831,549	926,281	816,096	811,506	811,168	806,217	854,339	848,948
1,212,740	1,195,824	1,046,154	1,027,236	1,059,072	1,046,526	919,084	909,294	925,366	915,289	969,723	960,521

## STATEMENT NO. V.--Showing particulars of vaccination

District.	Total number of persons vaccinated.		Total number inspected—								Percentage of	
			By Deputy Sanitary Commissioners or Civil Surgeons.				By Native Superintendents or other Inspecting Officers.				By Deputy Sanitary Civil	
			Deputy Sanitary Commissioners.		Civil Surgeons.		District Inspectors.		Sub-Inspectors.		Deputy Sanitary Commissioners.	
	Primary.	Re-vaccination.	Primary.	Re-vaccination.	Primary.	Re-vaccination.	Primary.	Re-vaccination.	Primary.	Re-vaccination.	Primary.	Re-vaccination.
1	2	3	4	5	6	7	8	9	10	11	12	13
Patna ...	71,349	2,435	15,447	...	561	495	12,648	...	24,697	...	21'65	...
Gaya ...	60,523	1,297	15,447	...	1,429	...	14,415	30	20,442	8	25'52	...
Shahabad ...	62,104	794	10,842	...	1,888	30	16,410	9	18,226	5	17'46	...
Saran ...	68,448	1,578	8,418	...	3,987	...	18,263	...	26,534	...	12'29	...
Champaran ...	55,201	3,694	8,025	...	10,443	643	9,081	141	13,326	207	14'57	...
Muzaffarpur ...	87,507	3,547	19,177	...	12,019	436	14,536	...	27,181	168	11'62	...
Darbhanga ...	92,790	1,866	...	...	4,519	401	19,503	204	29,219	...	...	...
Monghyr ...	55,050	160	8,948	...	2,231	...	6,330	...	12,278	26	16'25	...
Bhagalpur ...	56,321	3,344	15,451	...	1,328	2,541	19,427	22	37,872	35	27'43	...
Parnea ...	46,362	12,627	9,241	...	1,721	12	4,255	603	11,139	560	19'93	...
Santal Parganas ...	40,924	8,735	15,982	...	2,374	421	5,134	643	16,568	1,909	39'04	...
Cuttack ...	57,670	6,828	2,813	...	363	981	6,083	...	9,550	...	4'87	...
Balasore ...	20,848	10,370	1,266	...	169	831	4,912	223	6,795	937	6'07	...
Angul ...	4,116	291	...	...	928	...	1,379	...	1,752	15	...	...
Puri ...	39,362	4,183	1,625	...	435	338	10,279	280	20,809	675	4'12	...
Sambalpur ...	18,513	1,036	692	...	583	435	4,333	...	5,463	...	3'73	...
Hazaribagh ...	24,871	6,788	8,052	...	1,325	11	3,307	87	6,792	603	32'37	...
Ranchi ...	36,349	3,141	3,907	...	767	...	9,515	415	16,472	315	10'73	...
Palamau ...	16,532	7,138	4,970	...	2,076	354	3,935	57	4,669	22	30'06	...
Manbhum ...	39,958	6,564	2,214	...	1,707	899	3,942	256	5,598	...	5'54	...
Singhbhum ...	14,875	4,296	2,110	...	2,314	211	7,707	337	6,233	696	14'18	...
TOTAL ...	969,723	90,762	145,627	...	53,177	9,047	195,397	3,307	321,685	6,161	16'03	...



verified by Inspecting Officers during the year 1920-21.

inspection to total number vaccinated.						Percentage of cases found successful to total number inspected.								Percentage of successful cases reported by vaccinators.	
Commissioners or Surgeons.		By Native Superintendents or other Inspecting Officers.				By Deputy Sanitary Commissioners or Civil Surgeons.				By Native Superintendents or other Inspecting Officers.					
Civil Surgeons.		District Inspectors.		Sub-Inspectors.		Deputy Sanitary Commissioners.		Civil Surgeons.		District Inspectors.		Sub-Inspectors.			
Primary.	Re-vaccination.	Primary.	Re-vaccination.	Primary.	Re-vaccination.	Primary.	Re-vaccination.	Primary.	Re-vaccination.	Primary.	Re-vaccination.	Primary.	Re-vaccination.		
14	15	16	17	18	19	20	21	22	23	24	25	26	27		
79	10.92	17.72	...	34.60	...	96.97	...	92.41	37.17	97.85	...	98.05	...	99.43	52.15
2.36	...	23.82	2.31	33.77	.62	94.91	...	99.58	...	97.08	83.33	98.11	62.50	99.16	71.16
3.04	3.78	26.42	1.13	29.35	.63	85.30	...	93.07	66.66	89.04	66.66	97.30	100.	93.60	71.16
5.82	...	27.80	...	38.76	...	98.55	...	97.21	...	97.03	...	97.35	...	98.37	49.72
18.91	17.40	16.45	3.81	24.14	5.66	99.48	...	98.77	65.00	99.20	6.23	97.47	43.37	99.71	50.37
13.73	12.29	16.61	...	31.06	4.73	95.57	...	100.	100.	99.18	...	97.74	36.90	99.33	67.80
4.87	21.48	26.02	10.93	31.47	...	...	...	99.80	46.88	99.42	45.58	99.16	...	99.77	50.27
4.05	...	11.00	...	22.30	16.25	77.42	...	100.	...	99.73	...	99.85	73.07	99.95	48.20
2.35	76.23	34.49	.65	67.24	1.04	99.31	...	99.32	61.51	99.18	50.	99.64	51.42	99.76	59.45
3.71	.09	9.18	4.76	24.02	4.43	76.16	...	99.01	50.	99.05	66.17	97.65	64.10	99.22	47.27
5.80	4.81	12.54	7.37	40.48	21.85	81.04	...	97.77	64.37	98.34	76.58	97.32	91.50	98.78	62.24
.62	14.36	10.54	...	16.55	...	77.49	...	95.34	88.58	99.00	...	99.20	...	99.69	67.76
.81	8.09	23.78	2.42	32.90	10.17	56.39	...	98.81	77.59	99.45	56.05	90.55	80.89	98.26	68.46
22.78	...	31.29	...	42.56	5.15	...	...	98.18	...	92.96	...	92.40	66.60	94.43	59.45
1.10	8.08	26.12	6.69	52.83	16.13	86.45	...	96.55	79.58	98.16	74.28	97.88	74.22	97.50	68.01
3.14	41.98	23.42	...	29.61	...	57.69	...	90.90	77.24	91.67	...	88.84	...	96.42	64.86
5.32	.16	13.29	1.28	27.30	8.88	87.03	...	99.17	9.09	93.26	97.70	96.62	74.43	99.77	65.38
2.10	...	25.14	13.21	45.26	10.02	89.42	...	99.60	...	98.15	74.69	98.20	80.95	99.94	66.28
12.55	4.95	23.80	.79	28.24	.30	87.54	...	88.00	60.45	96.79	17.54	92.09	45.45	99.55	74.80
5.04	14.86	11.65	4.23	16.55	...	83.33	...	98.71	54.61	96.37	79.68	97.35	...	99.85	55.63
15.55	4.91	51.81	7.84	42.23	16.20	82.22	...	97.40	70.61	91.54	70.62	94.47	74.56	99.30	75.40
5.85	9.96	21.51	3.64	35.42	6.81	89.52	...	98.31	67.04	97.08	68.06	87.04	75.11	98.94	61.70

STATEMENT No. VI.—Showing side by side the ratios, per 1,000 of population, of Deaths from

District.	1911-12				1913-14		1914-15	
	Ratio of deaths from small-pox.	Number of successful vaccinations.	Ratio of deaths from small-pox.	Number of successful vaccinations.	Ratio of deaths from small-pox.	Number of successful vaccinations.	Ratio of deaths from small-pox.	Number of successful vaccinations.
1	2	3	4	5	6	7	8	9
Patna ...	·09	48,687	·07	48,768	·17	48,480	·48	57,665
Gaya ...	·07	69,923	·008	66,935	·03	67,817	·10	65,855
Shahabad	·02	36,809	·006	47,086	·09	53,812	·32	62,079
Saran ...	·03	83,221	·006	85,339	·06	81,699	·06	80,739
Champaran	·03	60,354	·07	55,486	·02	63,100	·10	64,146
Muzaffarpur	·05	102,535	·04	101,405	·01	103,052	·09	105,292
Darbhanga	·06	83,343	·01	93,546	·06	93,735	·24	97,760
Monghyr	·09	89,123	·08	84,475	·48	89,024	·46	89,749
Bhagalpur	·43	80,294	·41	77,274	·31	75,244	·35	75,831
Purnea	·24	59,409	·14	56,916	·22	60,587	·30	58,496
Santal Parganas	·08	61,909	·19	60,236	·27	64,815	·18	53,182
Cuttack	·002	153,747	·01	137,175	·01	134,227	·06	113,297
Balasore	·19	63,287	·006	63,271	·11	69,059	·90	53,281
Angul ...	...	8,207	...	5,906	...	7,945	...	7,680
Puri ...	·006	53,619	·02	55,642	·07	47,269	·02	33,820
Sambalpur	...	33,153	·04	25,955	·05	25,063	·02	27,561
Hazaribagh	·006	46,544	·02	46,150	·02	51,777	·03	48,299
Ranchi	·02	48,913	·004	51,096	·01	49,989	·03	50,953
Palamau	·008	24,782	...	23,683	·07	21,459	·10	28,327
Manbhum	·0006	60,420	·005	61,191	·02	61,316	·43	73,369
Singhbhum	·004	22,841	·05	20,254	·09	23,496	·45	25,909
Total	·08	1,288,620	·06	1,270,859	·11	1,292,965	·22	1,273,285



*s mall-pox and the number of successful vaccinations during the ten years ending 1920-21.*

1915-16		1916-17		1917-18		1918-19		1919-20.		1920-21	
Ratio of deaths from small-pox.	Number of successful vaccinations.	Ratio of deaths from small-pox.	Number of successful vaccinations.	Ratio of deaths from small-pox.	Number of successful vaccinations.	Ratio of deaths from small-pox.	Number of successful vaccinations.	Ratio of deaths from small-pox.	Number of successful vaccination.	Ratio of deaths from small-pox.	Number of successful vaccination.
10	11	12	13	14	15	16	17	18	19	20	21
·71	68,438	·28	67,870	·15	68,529	·13	68,535	·85	68,573	2·79	71,340
·68	75,641	·37	56,139	·18	62,246	·21	56,114	·62	66,449	·77	60,938
·45	65,016	·26	51,176	·10	51,858	·02	41,625	·24	42,394	·55	62,418
·15	79,608	·27	74,895	·16	77,721	·07	60,443	·10	66,882	·39	86,000
·14	68,255	·07	49,091	·11	51,755	·14	50,191	·13	53,458	·29	56,914
·24	104,624	·20	88,702	·09	85,898	·02	86,664	·10	87,182	·13	89,230
·41	95,237	·28	96,020	·07	93,206	·08	86,555	·10	88,770	·17	93,463
·42	87,999	·17	67,229	·10	68,361	·05	56,576	·24	59,814	·28	55,104
·38	74,532	·22	66,899	·22	68,166	·09	59,034	·23	56,741	·22	58,176
·38	51,206	·33	53,018	·64	49,490	·52	54,209	·96	50,349	·98	51,930
·37	57,558	·43	46,826	·14	56,728	·06	46,659	·30	44,691	·37	45,864
·69	89,925	·46	73,415	·81	62,177	·39	51,845	·91	55,008	·30	60,775
·90	38,609	·24	22,178	·03	25,800	·09	20,942	·86	22,139	·54	27,597
·01	9,686	·15	9,226	·01	6,956	·06	6,751	1·11	5,739	...	4,060
·30	37,595	·52	29,228	·26	34,639	·75	33,543	3·12	32,940	·77	41,225
·75	22,606	1·09	19,938	·24	23,345	·07	15,361	·68	13,835	·27	18,523
·49	46,709	·19	42,148	·07	39,751	·07	35,632	·24	35,026	·13	29,123
·12	52,111	·05	48,667	·03	47,094	·04	31,870	·90	40,559	1·38	38,450
·17	31,808	·15	25,542	·06	26,893	·06	20,472	1·26	21,226	1·76	19,346
·63	54,056	·23	49,379	·02	52,289	·05	37,807	·44	57,908	·11	43,192
·28	19,526	·12	17,429	·09	17,872	·10	15,542	1·24	19,595	·52	18,023
·42	1,230,745	·28	1,053,015	·19	1,070,784	·17	942,370	·53	989,278	·56	1,013,696

STATEMENT NO. VII.—Showing the protection afforded to infants in each town in the Province of Bihar and Orissa during the year 1920-21.

District.	Towns.	Number of births during the year ending 31st March 1921.	Number of deaths amongst infants under one year during the year ending 31st March 1921.	Number of successful vaccinations amongst infants under one year during the year ending 31st March 1921.	Date of extension of Vaccination Act to town.
1	2	3	4	5	6
Patna	Patna	3,744	775	2,603	1st October 1884.
	Bihar	866	165	649	1st April 1887.
	Dinapur	1,202	177	850	28th January 1891.
	Barh	271	51	202	1st April 1887.
	Khagole	236	42	171	12th July 1910.
	Total	6,319	1,210	4,475	
Gaya	Gaya	1,899	704	828	1st January 1883.
	Tikari	155	20	77	3rd January 1891.
	Daudnagar	248	62	107	Ditto.
	Total	2,302	786	1,002	
Shahabad	Arrah	1,389	257	858	20th July 1885.
	Buxar	414	142	393	1st April 1887.
	Dumraon	566	98	212	Ditto.
	Jagadispur	279	43	259	20th December 1890.
	Sassaram	793	180	451	1st April 1887.
	Bhabhua	184	47	149	Ditto.
	Total	3,625	767	2,322	
Total of Patna Division.		12,246	2,763	7,799	
Saran	Chapra	1,440	278	481	1st April 1887.
	Revelganj	335	62	50	12th December 1890.
	Siwan	457	58	217	1st April 1887.
	Total	2,232	398	748	
Champaran	Motihari	409	89	329	1st April 1887.
	Bettiah	925	112	390	Ditto.
	Total	1,334	201	719	



STATEMENT No. VII.—Showing the protection afforded to infants in each town in the Province of Bihar and Orissa during the year 1920-21—contd.

District.	Towns.	Number of births during the year ending 31st March 1921.	Number of deaths amongst infants under one year during the year ending 31st March 1921.	Number of successful vaccinations amongst infants under one year during the year ending 31st March 1921.	Date of extension of Vaccination Act to town.
1	2	3	4	5	6
Muzaffarpur	Muzaffarpur ...	1,155	278	784	1st January 1886.
	Sitamarhi ...	407	53	192	1st April 1887.
	Hajipur ...	772	164	189	1st May 1890.
	Lalganj ...	352	69	225	1st April 1887.
	Total ...	2,686	564	1,390	
Darbhanga	Darbhangha ...	1,990	351	429	24th May 1884.
	Roserha ...	600	73	45	3rd January 1891.
	Samastipur ...	276	39	51	25th July 1910.
	Madhubani ...	323	59	20	1st April 1887.
	Total ...	3,189	522	545	
	Total of Tirhut Division.	9,441	1,685	3,402	
Monghyr	Monghyr ...	1,706	247	140	15th November 1882.
	Jamalpur ...	1,025	197	464	Ditto.
	Total ...	2,731	444	60	
Bhagalpur	Bhagalpur ...	1,871	312	537	15th February 1884 withdrawn on 16th October 1895 ; re-extended on 18th August 1898.
	Colgong ...	149	39	56	Ditto, re-extended on 19th December 1901.
	Total ...	2,020	351	593	
Purnea	Purnea ...	427	48	185	1st July 1887.
	Kishanganj ...	164	24	130	12th November 1892.
	Katihar ...	237	20	276	8th August 1910.
	Forbesganj ...	177	11	95	9th August 1912.
	Total ...	1,005	103	686	

STATEMENT NO. VII.—Showing the protection afforded to infants in each town in the Province of Bihar and Orissa during the year 1920-21.—contd.

District.	Towns.	Number of births during the year ending 31st March 1921.	Number of deaths amongst infants under one year during the year ending 31st March 1921.	Number of successful vaccinations amongst infants under one year during the year ending 31st March 1921.	Date of extension of Vaccination Act to town.
1	2	3	4	5	6
Santal Parganas ...	Sahibganj ...	570	104	274	1st May 1884.
	Deoghar ...	216	48	95	Ditto.
	Madhupur ...	182	23	79	22nd August 1910.
	Dumka ...	186	46	99	Notifications, dated the 9th April 1884, and 23rd August 1910.
	Total ...	1,154	221	547	
	Total of Bhagalpur Division.	6,910	1,119	2,430	
Cuttack ...	Cuttack ...	1,080	182	401	1st September 1884.
	Kendrapara ...	477	103	115	7th February 1888.
	Jajpur ...	330	77	99	Ditto.
	Total ...	1,887	362	615	
Balasore ...	Balasore ...	197	94	69	7th February 1888.
Puri ...	Puri ...	593	283	228	Ditto.
Sambalpur ...	Sambalpur ...	385	97	140	7th March 1895.
	Total of Orissa Division.	3,062	836	1,052	
Hazaribagh ...	Hazaribagh ...	478	41	135	1st January 1885.
	Chatra ...	266	87	63	1st August 1885.
	Giridih ...	338	61	111	8th September 1910.
	Total ...	1,082	189	309	
Ranchi ...	Ranchi ...	1,080	132	935	1st April 1887.
	Lohardaga ...	151	17	127	25th June 1892.
	Total ...	1,231	149	1,062	



STATEMENT No. VII.—Showing the protection afforded to infants in each town in the Province of Bihar and Orissa during the year 1920-21—concl'd.

District.	Towns.	Number of births during the year ending 31st March 1921.	Number of deaths amongst infants under one year during the year ending 31st March 1921.	Number of successful vaccinations amongst infants under one year during the year ending 31st March 1921.	Date of extension of Vaccination Act to town.
1	2	3	4	5	6
Palamau	Daltonganj	225	44	106	9th October 1890.
Manbhum	Purulia	374	60	524	1st January 1887.
	Raghunathpur	179	22	57	9th February 1894.
	Jhalda	156	16	41	9th July 1892.
	Dhanbad	237	30	113	5th December 1918.
	Total	946	128	735	
Singhbhum	Chaibassa	291	26	159	20th June 1892.
	Chakradharpur	194	14	12	13th January 1919.
	Total	485	40	171	
	Total of Chota Nagpur Division.	3,999	550	2,883	
Total for the Province		35,658	6,953	17,066	

*Provincial Statement showing the different kinds of lymph*

District.	Primary vaccination.											
	Direct from the calf.					With lanoline or glycerine lymph.					Arm-to-arm	
	Total.	Successful.	Unsuccessful.	Unknown.	Percentage of successful cases.	Total.	Successful.	Unsuccessful.	Unknown.	Percentage of successful cases.	Total.	Successful.
1	2	3	4	5	6	7	8	9	10	11	12	13
Patna ... ..	...	...	...	...	...	71,349	70,044	793	512	99.43	...	...
Gaya ... ..	...	...	...	...	...	60,523	60,015	361	147	99.16	...	...
Shahabad ... ..	...	...	...	...	...	62,104	61,853	230	21	99.59	...	...
Saran ... ..	...	...	...	...	...	63,448	67,267	687	494	98.27	...	...
Champanan ... ..	...	...	...	...	...	55,201	55,053	94	54	99.73	...	...
Muzaffarpur ... ..	...	...	...	...	...	87,507	86,925	569	13	99.33	...	...
Darbhanga ... ..	...	...	...	...	...	92,790	92,580	202	8	99.77	...	...
Monghyr ... ..	...	...	...	...	...	55,050	55,026	17	7	99.95	...	...
Bhagalpur ... ..	...	...	...	...	...	56,321	56,188	55	78	99.76	...	...
Purnea ... ..	...	...	...	...	...	46,362	45,959	324	79	99.10	...	...
Santal Parganas ... ..	...	...	...	...	...	40,924	40,427	299	198	98.78	...	...
Cuttack ... ..	...	...	...	...	...	57,670	57,056	177	437	98.92	...	...
Balasore ... ..	...	...	...	...	...	20,858	20,497	84	277	98.26	...	...
Angul ... ..	...	...	...	...	...	4,116	3,887	71	158	94.43	...	...
Furi ... ..	...	...	...	...	...	39,362	38,380	205	777	97.50	...	...
Sambalpur ... ..	...	...	...	...	...	18,513	17,851	333	329	96.42	...	...
Hazaribagh ... ..	...	...	...	...	...	24,871	24,814	40	17	99.77	...	...
Ranchi ... ..	...	...	...	...	...	36,389	36,368	20	1	99.94	...	...
Palamau ... ..	...	...	...	...	...	16,532	16,045	82	405	97.05	...	...
Manbhum ... ..	...	...	...	...	...	39,958	39,504	175	279	98.86	...	...
Singhbhum ... ..	...	...	...	...	...	14,875	14,782	69	24	99.37	...	...
TOTAL ... ..	...	...	...	...	...	969,723	960,521	4,887	4,315	99.05	...	...



II.  
*used and their rates of success during the year 1920-21.*

			Re-vaccination.														
vaccination.			Direct from the calf.					With lanoline or glycerine lymph.					Arm-to-arm vaccination.				
Unsuccessful.	Unknown.	Percentage of successful cases.	Total.	Successful.	Unsuccessful.	Unknown.	Percentage of successful cases.	Total.	Successful.	Unsuccessful.	Unknown.	Percentage of successful cases.	Total.	Successful.	Unsuccessful.	Unknown.	Percentage of successful cases.
14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
...	...	...	...	...	...	...	...	2,485	1,296	940	249	32.15	...	...	...	...	...
...	...	...	...	...	...	...	...	1,297	923	348	26	71.16	...	...	...	...	...
...	...	...	...	...	...	...	...	794	565	207	22	71.15	...	...	...	...	...
...	...	...	...	...	...	...	...	1,578	733	598	247	46.45	...	...	...	...	...
...	...	...	...	...	...	...	...	3,694	1,861	1,376	457	50.37	...	...	...	...	...
...	...	...	...	...	...	...	...	3,547	2,305	1,074	168	64.98	...	...	...	...	...
...	...	...	...	...	...	...	...	1,866	888	684	294	47.58	...	...	...	...	...
...	...	...	...	...	...	...	...	160	78	64	18	48.75	...	...	...	...	...
...	...	...	...	...	...	...	...	3,344	1,988	1,309	47	59.45	...	...	...	...	...
...	...	...	...	...	...	...	...	12,627	5,971	5,687	939	47.28	...	...	...	...	...
...	...	...	...	...	...	...	...	8,735	5,137	2,340	958	62.24	...	...	...	...	...
...	...	...	...	...	...	...	...	6,828	3,719	1,769	1,340	54.46	...	...	...	...	...
...	...	...	...	...	...	...	...	10,370	7,100	1,844	1,426	68.46	...	...	...	...	...
...	...	...	...	...	...	...	...	291	173	88	39	59.45	...	...	...	...	...
...	...	...	...	...	...	...	...	4,183	2,845	596	742	68.01	...	...	...	...	...
...	...	...	...	...	...	...	...	1,036	672	145	219	64.86	...	...	...	...	...
...	...	...	...	...	...	...	...	6,788	4,309	732	1,747	63.48	...	...	...	...	...
...	...	...	...	...	...	...	...	3,141	2,032	821	238	66.26	...	...	...	...	...
...	...	...	...	...	...	...	...	7,138	3,201	1,112	2,725	46.24	...	...	...	...	...
...	...	...	...	...	...	...	...	6,564	3,638	2,029	847	56.18	...	...	...	...	...
...	...	...	...	...	...	...	...	4,296	3,241	680	375	75.44	...	...	...	...	...
...	...	...	...	...	...	...	...	99,762	53,175	24,443	13,144	58.58	...	...	...	...	...







